PATENT SPECIFICATION (11) 1 557 721

1 557 721

(21) Application No. 31146/76 (22) Filed 27 Jul. 1976

(31) Convention Application No. 7528302 (32) Filed 16 Sep. 1975 in

(33) France (FR)

(44) Complete Specification Published 12 Dec. 1979

(51) INT.CL.[2] B60S 1/40

(52) Index at Acceptance
A4F 24B2A3B1B

(19)

(54) IMPROVEMENTS IN OR RELATING TO WIPERS FOR VEHICLES

(71) We, PAUL JOURNEE S.A., a French Body Corporate, of 39 Avenue Marceau, 92400 Courbevoie, France do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to wipers especially for automobile vehicles and more particularly to a mounting of a detachable wiper blade on an arm.

It is known, in order to achieve such a mounting, to provide the blade or the arm with a projecting pin adapted to cooperate with a bore provided in the other part and provided with locking means which allow a relative rotation between the blade and the arm about the pivot constituted by said pin.

This type of mounting permits a rapid exchange of the blade, which is the part which undergoes the greatest wear and must be replaced rather frequently. However, mounting systems of this type only allow the adoption of a blade which has been specially designed for this purpose, that is to say, a blade having a bore receiving a pin which means for locking this pin or a blade itself provided with a pin. They do not allow the mounting of blades of another type, such as blades secured by bayonet or hook means. Moreover, the known systems require, in the case of a pin integral with the arm, the exchange of a blade provided with locking means, which increases the price of the exchanged part constituted by said blade.

According to the invention there is provided a connecting device for mounting a wiper blade on a pivotal arm or adaptor connectible to the latter, comprising a pin for attachment to one of the blade and pivotal arm or adaptor, adapted to cooperate with a bore formed in the other of said blade and pivotal arm or adaptor, a first abutment adapted to restrain relative movement between said pin and bore in one direction axially of the pin and bore, and a second abutment adapted to restrain relative movement between said pin and bore in the other direction axially of the pin and bore, said abutments being disposed exteriorly of said bore and not mounted on said other of said blade and pivotal arm or adaptor.

The use of such abutments combined with the pin enables the part that does not have the pin to be simplified which is very advantageous if this part is the blade. Moreover, these locking means can cooperate with an adaptor provided with a bore and adapted to be connected to an arm of a different type, for example an arm having bayonet or hook means.

An understanding of the present invention will be had from the ensuing description with reference to the accompanying drawings, in which:

Figure 1 is an axial sectional view of a mounting pin, after assembly with an adaptor element,

Figure 2 is similar to Figure 1, the component parts being shown in the course of disassembly,

Figures 3, 5, 7, 9 and *11* are similar to Figure 1 and concern various modifications of the invention, and

Figures 4, 6, 8, 10 and *12* are similar to Figure 2 and concern the modifications shown in Figures 3, 5, 7, 9 and 11 respectively.

In the illustrated embodiments, the mounting pin 1 is fast with a wiper blade 2 and cooperates with a bore 3 of an adaptor element 4. The element 4 is adapted to cooperate with an arm (not shown) which is provided with mounting means having, for example, a bayonet or hook. By eliminating the adaptor element 4, the pin 1 can be mounted directly in a bore extending through a wiper arm. A shoulder 1*a* formed

on said pin serves as a first abutment. As mentioned hereinbefore, inversely, the pin 1 may be fast with the arm.

In the embodiment shown in Figures 1 and 2, the blade 2 carries a bracket 5 provided with a stud 6 on which there is pivotally mounted a lock member 7 constituted by a spring strip folded into the shape of a U, the end thereof opposed to the stud 6 serving as a second abutment having a boss 8 which cooperates with a recess 9 in the free end of the pin 1.

In the modification shown in Figures 3 and 4, the pin is provided with an axial throughway bore containing a push-rod 10 which is slidable in the bore in opposition to the action of a spring 11. The push-rod 10 terminates in a frusto-conical head 12 which, upon extension of the spring 11, elastically and radially expands a split locking ring 13. When the spring 11 is compressed by pressure applied to the rod 10, the ring 13 contracts and assumes a diameter which is less than that of the bore 3 so allowing the pin to be inserted into or extracted from the bore 3.

In the embodiment shown in Figures 5 and 6, the pin 1 is constituted by an axially slotted tube 14 in which there is mounted a locking member of an elastic material forming a deformable elongated finger member 15 which terminates in a hook 16 adapted to project out of the adaptor element 4 in the mounted position (Figure 5). Disassembly is achieved by elastically deforming the finger member 15 inwardly of the tube 14 so as to withdraw the hook 16. The finger member 15 passes through the axial slot in the pin.

In the embodiment shown in Figures 7 and 8, the pin 1 has an axial bore in which there is slidable a push-rod 17 which is biased by a spring 18. The push-rod 17 terminates in a fork 19 which cooperates with a locking member constituted by a spring strip 20 folded into the shape of a V and retained by a pin 21 integral with the pin 1. On depression of the push rod 17 the arms of the spring strip are temporarily deformed towards each other so that the pin can be withdrawn.

In the embodiment shown in Figures 9 and 10, the pin 1 is of an elastic material and has an axial slit 22 defining two arms 23 and 23' provided respectively with projections 24 and 24' which project out of the element 4 in the mounted position (Figure 9). To disassemble, it is sufficient to move the two arms 23 and 23' towards each other to withdraw the projections 24 and 24'. More than two arms may be provided.

In the embodiment shown in Figures 11 and 12, the adaptor element 4 is of channel section and has an inner shoulder 25, and the pin 1 carries a locking member 26 having elastic arms 27 which engage behind the shoulder 25 in the mounted position (Figure 11). The free end of the pin 1 carries a push-member 28 biased outwardly by a spring 29 and having a cylindrical skirt portion 30 which cooperates with the arms 27 so as to force their ends together when the push-member 28 is depressed and compresses the spring 29.

WHAT WE CLAIM IS:

1. A connecting device for mounting a wiper blade on a pivotal arm or adaptor connectible to the latter, comprising a pin for attachment to one of the blade and pivotal arm or adaptor, adapted to cooperate with a bore formed in the other of said blade and pivotal arm or adaptor, a first abutment adapted to restrain relative movement between said pin and bore in one direction axially of the pin and bore, and a second abutment adapted to restrain relative movement between said pin and bore in the other direction axially of the pin and bore, said abutments being disposed exteriorly of said bore and not mounted on said other of said blade and pivotal arm or adaptor.

2. A device as claimed in claim 1, in which the pin is fast with the blade and engages a bore in the arm, wherein one abutment is formed by a shoulder on said pin at one side of the bore and the other abutment is formed by an end of a spring clip which engages the pin on the other side of the bore.

3. A device as claimed in claim 2, wherein said spring clip is pivotally mounted on said blade.

4. A device as claimed in claim 1, in which the pin is fast with the wiper blade and engages a bore in the arm, wherein said pin is provided with an axial bore in which there is slidable a spring-biased push-rod, one end of which extending from said pin and the other end of said push-rod having a frusto-conical head adapted to expand an elastic split ring serving as one of said abutments.

5. A device as claimed in claim 1, in which the pin is fast with the blade and engages a bore in the arm, wherein said pin is provided with an axial bore through which there passes an elastic finger member terminating in a hook serving as one of said abutments which projects out of said axial bore.

6. A device as claimed in claim 1, in which the pin is fast with the blade and engages a bore in the arm, wherein said pin is provided with an axial bore in which there is slidable a spring-biased push-rod, said push-rod terminating in a fork adapted to disengage on depression of the push-rod a deformable locking member from said arm, said locking member serving as one of said abutments.

7. A device as claimed in claim 1, in which the pin is fast with the blade and engages a bore in the arm, wherein said pin has at least two elastic arms terminating in projections serving as one of said abutments which have, in a non-deformed state, a diameter exceeding the diameter of the bore which receives the pin.

8. A device as claimed in claim 1, in which the pin is fast with the blade and engages a bore in the arm, wherein said pin carries radially projecting elastically deformable arms, the ends of which are adapted to engage with said arm and serve as one of said abutments, a spring-biased push-member being axially slidable on the end of said pin and having a cylindrical skirt portion which cooperates with said arms so as to force their ends together in the course of the displacement of said push-member against the spring bias.

9. A wiper connecting device substantially as described herein with reference to any one of the examples shown in the accompanying drawings.

For the Applicants:
MATTHEWS, HADDAN & Co.
Chartered Patent Agents
Haddan House,
33 Elmfield Road,
Bromley,
Kent.

Printed for Her Majesty's Stationery Office,
by Croydon Printing Company Limited, Croydon, Surrey, 1979.
Published by The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.

1557721 COMPLETE SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1

Fig. 1

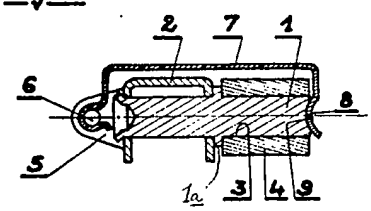


Fig. 2

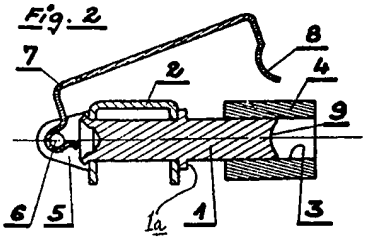


Fig. 3

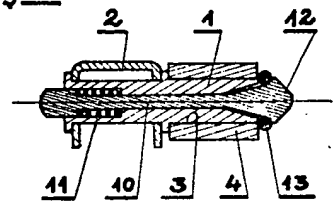


Fig. 4

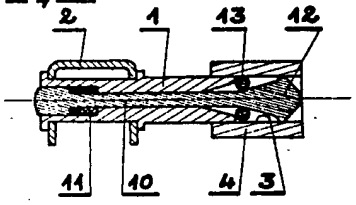


Fig. 5

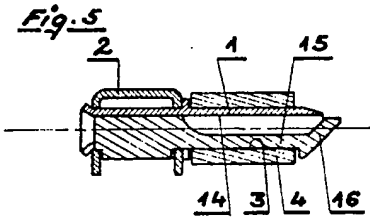
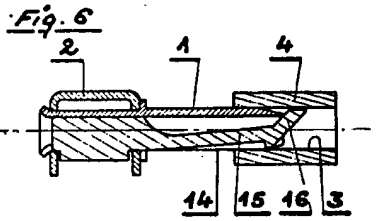


Fig. 6



1557721 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

Fig. 7

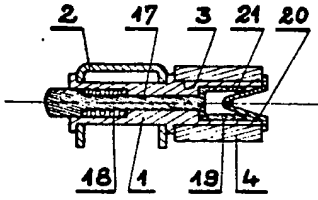


Fig. 8

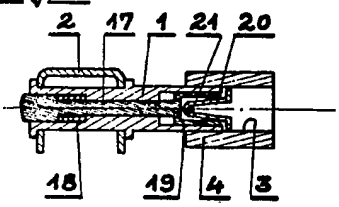


Fig. 9

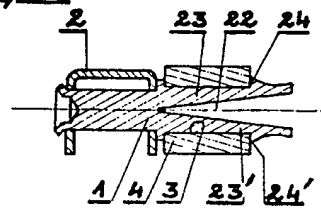


Fig. 10

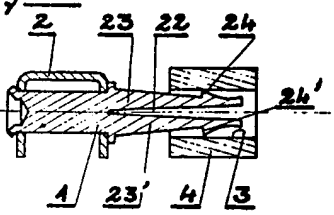


Fig. 11

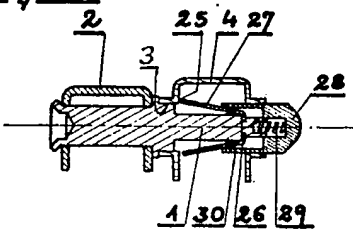


Fig. 12